

Appl. No. : 10/764,012
Filed : January 23, 2004

AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated below:

1. (Currently Amended) A polymer matrix composite material, comprising:
 - (1) a polyurethane formed by reaction of a reaction mixture, comprising:
 - (a) one or more monomeric or oligomeric poly- or di-isocyanates;
 - (b) a first polyol selected from the group consisting of polyether polyols and polyester polyols, having a first molecular weight; and
 - (c) ~~an optional~~ second polyol selected from the group consisting of polyether polyols and polyester polyols, having a second molecular weight lower than the first molecular weight and forming a polyurethane that is less rigid than that formed by the first polyol; and
 - ~~(2) an optional polyisocyanurate formed by reaction of a monomeric or oligomeric poly- or di-isocyanate with water which has been optionally added to the reaction mixture;~~
 - ~~(3)~~(2) an inorganic particulate material.
2. (Original) The polymer matrix composite material of claim 1, wherein the material is foamed.
3. (Original) The polymer matrix composite material of claim 1, further comprising one or more inorganic fibers disposed throughout the polymer matrix.
4. (Original) The polymer matrix composite material of claim 1, further comprising axially oriented fiber rovings disposed on, in, or beneath the surface of the composite.
5. (Currently Amended) The polymer matrix composite material of claim 1, wherein the second polyether polyol is present in an amount greater than ~~between 0 and less than~~ about 20 wt% of the first polyether polyol.
6. (Original) The polymer matrix composite material of claim 1, wherein the inorganic particulate material is present in an amount ranging between about 45 wt% and about 80 wt%, based on the total weight of the composition.
7. (Currently Amended) The polymer matrix composite material of claim 1, wherein the inorganic particulate material is one or more of a fly ash, bottom ash, or particulate glass.

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8. (Original) The polymer matrix composite material of claim 1, wherein the inorganic particulate material has a particle size distribution ranging from about 0.0625 in. to below about 325 mesh.

9. (Original) The polymer matrix composite material of claim 1, wherein the inorganic particulate material contains less than about 0.5 wt% water.

10. Canceled.

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21. Canceled.

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26. Canceled.

27. Canceled.

28. (New) The polymer matrix composite material of claim 1, wherein the composite material is self-skinning.

29. (New) The polymer matrix composite material of claim 1, having a density ranging from about 20 to about 90 lb/ft³.

30. (New) The polymer matrix composite material of claim 1, having a density ranging from about 20 to about 60 lb/ft³.

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31. (New) The polymer matrix composite material of claim 1, wherein the polymer matrix composite material additionally comprises a polyisocyanurate formed by reaction of the monomeric or oligomeric poly- or di-isocyanate with water.
32. (New) The polymer matrix composite material of claim 1, wherein the monomeric or oligomeric poly- or di-isocyanates comprise a methylene diphenyl diisocyanate (MDI).
33. (New) The polymer matrix composite material of claim 32, wherein the MDI has a viscosity ranging from about 25 to about 200 cp at 25 °C.
34. (New) The polymer matrix composite material of claim 32, wherein the MDI has an NCO content ranging from about 30% to about 35%.
35. (New) The polymer matrix composite material of claim 32, wherein the MDI provides at least one equivalent NCO group to one equivalent OH group from the polyols.
36. (New) The polymer matrix composite material of claim 35, wherein the MDI provides about 5% to about 10% excess NCO groups.
37. (New) The polymer matrix composite material of claim 1, wherein the ratio of isocyanates to polyols, based on equivalent weights, is from about 0.5:1 to about 1.5:1.
38. (New) The polymer matrix composite material of claim 37, wherein the ratio of isocyanates to polyols, based on equivalent weights, is from about 0.8:1 to about 1.1:1.
39. (New) The polymer matrix composite material of claim 1, wherein the ratio of the second polyol to the first polyol ranges from about 5 wt% to about 20 wt%.
40. (New) The polymer matrix composite material of claim 39, wherein the ratio of the second polyol to the first polyol is about 15 wt%.
41. (New) The polymer matrix composite material of claim 3, wherein the one or more inorganic fibers disposed in the polymer matrix are present in amounts less than 10 % by weight, based on the total weight of the material.
42. (New) The polymer matrix composite material of claim 1, wherein the first and the second polyols are non-EO tipped polyols.
43. (New) The polymer matrix composite material of claim 1, wherein the first polyol is about 6 to about 18 wt% and the second polyol is greater than 0 to about 10 wt%, based on the total weight of the composite material.

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44. (New) A polymer matrix composite material, comprising:
a polyurethane formed by reaction of a reaction mixture, comprising:
one or more monomeric or oligomeric poly- or di-isocyanates;
a first non-EO tipped polyol selected from the group consisting of
polyether polyols and polyester polyols, having a first molecular weight; and
a second non-EO-tipped polyol selected from the group consisting of
polyether polyols and polyester polyols, having a second molecular weight lower
than the first molecular weight and forming a polyurethane that is less rigid than
that formed by the first polyol; and
an inorganic particulate material.
45. (New) A polymer matrix composite material comprising:
a polyurethane formed by reaction of a reaction mixture, comprising:
one or more monomeric or oligomeric poly- or di-isocyanates;
a first polyol selected from the group consisting of polyether polyols and
polyester polyols, having a first molecular weight; and
a second polyol selected from the group consisting of polyether polyols
and polyester polyols, having a second molecular weight lower than the first
molecular weight and forming a polyurethane that is less rigid than that formed by
the first polyol; and
about 60 to about 85 wt% of an inorganic particulate material, based on the total
weight of the composite material,
wherein the polymer matrix composite material has a flexural strength of at least
1929 psi.
46. (New) The polymer matrix composite material of Claim 45, wherein the flexural
strength is at least 2786 psi.
47. (New) The polymer matrix composite material of Claim 45, wherein polymer
matrix composite material has a flexural modulus of 118,331 psi.